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## THE ECONOMIC IMPACT OF E-COMMERCE

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### ABSTRACT

E-commerce has a significant impact on business costs and productivity. E-Commerce has a chance to be widely adopted due to its simple applications. Thus it has a large economic impact. It gives the opportunity for “boundary crossing” as new entrants, business models, and changes in technology erode the barriers that used to separate one industry from another. This increases competition and innovation, which are likely to boost overall economic efficiency.

**Key words:** E-Commerce, Bangladesh, B2B, B2C, Logistics

### 1. INTRODUCTION

E-commerce is a way of conducting business over the Internet. Though it is a relatively new concept, it has the potential to alter the traditional form of economic activities. Already it affects such large sectors as communications, finance and retail trade and holds promises in areas such as education, health and government. The largest effects may be associated not with many of the impacts that command the most attention (i.e. customized product, elimination of middlemen) but with less visible, but potentially more pervasive, effects on routine business activities (i.e. ordering office supplies, paying bills, estimating demand).

### 2. OBJECTIVE OF THE STUDY

- To examine impact of e-commerce on business cost and productivity.
- To evaluate present status of e-commerce.
- To identify how e-commerce reduces cost

of customer services and after sales services.

- To identify key success factors of e-commerce
- To provide insights for policy formulation in the area of e-commerce.

### 3. METHODOLOGY

The article has been written on the basis of secondary information. The secondary information and data were collected from published books, journals, research papers, and official statistical documents. Reports published on ‘e-commerce’ by Organization of Economic Cooperation and Development (OECD) provides important ideas regarding the topic.

### 4. DEFINITION OF E-COMMERCE

Electronic commerce, or e-commerce, is the buying and selling of goods and services on the

Internet. Other than buying and selling, many people use Internet as a source of information to compare prices or look at the latest products on offer before making a purchase online or at a traditional store. E- business is sometimes used as another term for the same process. More often, though, it is used to define a broader process of how the Internet is changing the way companies do business, of the way they relate to their customers and suppliers, and of the way they think about such functions as marketing and logistics. For the purpose of this study e-commerce is taken to mean doing business electronically. (Lindsay P., 2002)

Other terms that are often used when talking about e-commerce are B2B and B2C, shorthand for business-to-business, where companies do business with each other, and business-to-consumer, where companies do business with consumers using the Internet. These are considered to be main forms of e-commerce.

## 5. THE ONLINE ECONOMY

The advent and spectacular growth of the Internet have spawned claims of a 'new economy' governed by a 'new economics'. Economists rarely endorse such claims, pointing out that basic micro-economic and macroeconomic principles still apply. Shapiro (1999, p. 2) for example comments that –'Fortunately, history can still be our guide ...while we cannot rely much on the classical model of perfect competition and price setting firms, we don't need a fundamentally new economics'. Shapiro and Varian (1999, p. x) argue that, 'even though technology advances breathlessly, the economic principles we rely on are durable'. However, while the underlying economic principles remain unchanged, e-commerce and the Internet have significantly altered firms' cost structures and raised the importance of certain economic phenomena, including network economics.

Shapiro (1999) argues that, 'networks, interconnection and leveraging are not new phenomena, just increasingly important'. While the prominence of network effects may not constitute new economics, or even a new economy, it is clear that there has been a marked and permanent break with the past.

## 6. THE ECONOMICS OF NETWORKS

The Internet is a global network. Use of the Internet for commercial purposes, as in e-

commerce, is therefore subject to significant 'network effects' or demand side scale economies. Network effects are not new but they are endemic in the online economy (Shapiro 1999b). As Shapiro and Varian (1999,p.173) remark, 'the old industrial economy was driven by economies of scale; the new information economy is driven by economies of networks.'

Shapiro (1999 a, p.1) describes the network economy as follows:

The essence of the 'network economy' is that consumers place greater value on large networks than on smaller ones. Such 'network effects' clearly apply to real networks, such as networks of telephone user, compatible fax machines, or compatible modems. Perhaps less obviously, they also apply to virtual networks, such as the network of Apple Macintosh users, the network of users of Microsoft excel, or the network of users of DVD machines. In industries ranging from computer software and hardware, to credit cards, ATM cards and smart cards to telecommunications networks and the Internet itself, network effects are a critical part of the competitive landscape.

For information- intensive industries, the global scale of the Internet releases both demand-side and supply side scale economies, producing what Shapiro and Varian (1999, p. 182) describe as:

A 'double whammy' in which growth on the demand side both reduces cost on the supply side and makes the product more attractive to other users- accelerating the growth in demand even more. The result is especially strong feedback, causing entire industries to be created or destroyed far more rapidly than during the industrial age.

## 7. E-COMMERCE IN USA AND EUROPE

At present, United States of America is typically credited with about four-fifths of worldwide e-commerce activity. The figures roughly suggest that Eastern Europe represents about 10% and Asia about 5% of the world total. In Europe, United Kingdom and the Nordic countries are the current leaders, although some estimates attribute significant activity to Germany. For each of the major categories of e-commerce activities –live audio, shopping, finance, and content (sports, adult) – USA typically has 67 to 85 of the top 100 sites. Canada comes in second for five out of the

six categories. Over the near term, the US lead is expected to decline to about two-third of world's total e-commerce activity, particularly because France's Minitel and Germany's T-online services have accustomed their citizens to online buying; as

these services migrate the Internet, e-commerce should expand. Also, Europe may see a user led demand pull, in contrast to the technology push thought to characterize the US situation (Hawkins, 1998).

**Table1: Selective individual firm's e-commerce revenues by activity**

Activity	1995-97 (\$ million)
<b>E-commerce (B2B)</b>	
CSX	3000
GE	1000
NEC	1528
Cisco	2496
Dell Computer	730
<b>E-commerce (B2C)</b>	
Autos: Auto by tel.	14
Books: Amazon	148
Groceries (peapod)	60
Toys (e toys)	7
Music (N2K)	148

Source: OECD, 1999

**Table 2: Estimates of e-commerce sales compared to various benchmarks.**

	E-commerce estimates (\$billion)	US catalogue sales (%)	US credit card purchase (%)	Direct marketing (%)	OECD-7 total retail sales (%)
(1996/97)	26	37	3	2	0.5
(2001/02)	330	309	24	18	5
(2003/05)	1000	780	54	42	15

Source: OECD estimates, 2003

## 8. E-COMMERCE IN BANGLADESH

Despite being a under developed country, selected segments of the Bangladeshi business community has embraced technology with reasonable success. The Facsimile in the 1980's and mobile telephones in the 1990's popularized modern technology in the mass market. Personal computers and the Internet are also emerging as day-to-day business tools. These positive indicators are favoring the prospects of e-commerce in Bangladesh.

B2C e-commerce is unlikely to be of much use in the near future in Bangladesh because of low per capita income, a weak infrastructure, lack of a proper legal environment and lack of trust between business and consumers. B2C for cross border trade is also limited by the factors suggested for the domestic front. In addition, difficulties in

accessing international credit cards, foreign currency remittance restrictions, delays and informal payment at customs clearance even for small value and quantity items will discourage B2C.

The B2B application already exists in the export sector of Bangladesh, especially in the Ready-Made Garments (RMG) industry. RMG has the lion's share of the export earnings in Bangladesh. The RMG sector has begun to use the Internet, and its dependence on e-commerce is likely to grow in the coming years. The Internet would enable them to seek information about potential buyers as well as raw material suppliers. Similarly the practice of posting a website by individual producers has begun. However, if Bangladeshi producers are unable to accommodate electronic transfer of payment and other facets of e-commerce, the

business opportunity will move on to countries that have developed such systems.

B2G e-commerce is possible in Bangladesh, but on a limited scale at this stage. The government is a major buyer of goods and services from the private sector. Typically, the government procures goods and services by inviting tenders. The availability of the 'Request For Proposal' (RFP) and other relevant documents on-line provides an alternative choice. Transactions involving information collection, obtaining various governmental forms, registering activities can also be conducted on-line. This will reduce time costs, corruption and the necessity of going through lengthy bureaucratic procedures as well as increasing transparency. (Hossain, 2000)

## 9. A FRICTION FREE SOCIETY

Rapid technological development, progress in information and communication technologies along with their wide spread diffusion led to speculation about "frictionless" economies in which transaction costs are nearly zero and barriers to entry and contestability are non-existent. Some think that Internet will eliminate existing intermediaries and drastically reduce transaction costs.

These lower production costs will encourage the entry of new business and thus increase competition and pressure to pass lower costs on to consumers as lower prices. In addition, consumers will be able to search among thousands of merchants for the lower prices, thereby increasing the downward pressure on prices and leading to a shift in market power from producer to consumer (Hage and Armstrong, 1997).

In general, it is thought that electronic commerce can significantly improve the efficiency of economies, enhance their competitiveness, improve the allocation of resources, and increase long-term growth.

## 10. IMPACT OF E-COMMERCE

Because electronic commerce is still at a very early stage in its development, much of this thinking is based on speculation on sketchy evidence. These claims can be analyzed by looking first at price declines in key technologies, which enables electronic commerce. The price declines in these

supporting technologies allow firms to reduce its production costs. However, given the intangible nature of e-commerce, new transaction costs are generated, many of which are associated with creating trust and managing some of the risks.

### 10.1 The Falling Cost of Information and Communication Technologies

As electronic commerce is an Internet application, it runs on an infrastructure composed of computers, software and communication systems and uses the Internet's key infrastructure applications (e.g. e-mail, world wide web, browser). This group of technologies has supported the development of electronic commerce and in turn is the source of much of electronic commerce's value. Advances in microelectronics have caused the price of memory chips and semiconductors to decline steadily. While these price declines are among the most spectacular, many other elements of computing – disk drives for data storage, printers and other peripherals – have also seen significant price declines. These falling prices allow firms to engage in e-commerce. In fact, the cost of processing, analyzing, storing, and presenting data has fallen to such an extent that computing power is now widely diffused in applications like skins, greeting cards etc.

Fiber optics technology, radio and satellite transmission have also fuelled large price decline in communications costs. However, because of network nature of the communication sector and its regulatory environment, the overall drop in phone call prices has been more modest. Segments that are exposed to competition, such as the tariff basket for business communication charges in competitive markets and the price of leased lines have declined.

New technologies such as digital subscriber lines (DSL), continued liberalization of regulations, the arrival of new entrants, and addition of significant new capacity have lead some to suggest that communication prices may begin to follow a similar performance to price path as information technologies (Gilder, 1994).

Assessing the collective impact of these technological developments and their associated price declines on production costs, productivity, and prices is very difficult to ascertain and has led

to a sub-field of economics that tries to explain the “productivity paradox”. Paradox is unlikely to have a single solution, and the issue of whether or not computers significantly increase productivity has not been resolved. This is not surprising, since the broad impact of the telephone, which has been widely diffused for generations, on social interaction, location decisions, and business structure is still not well understood. (Fisher, 1992)

E-commerce also affects manufacturing processes. Dell computers for example, have extended the supply of customized products back into its manufacturing processes, facilitating ‘mass customization’ of its desktop computers (Borenstein & Saloner 2001). On the other hand, as Borenstein and Saloner (2001, p. 6) recognizes, there are impediments to capturing the cost savings of e-commerce and the Internet, including ‘inertial forces that relate more to organizational issues, the importance of compatibility with legacy systems and non-technological transactions costs’.

## 10.2 Changing Firms’ Cost Structure

The impact of e-commerce on firms’ internal production and transaction costs falls into three broad categories:

- I) The cost of executing the sale,
- II) Costs associated with the procurement of production inputs, and
- III) Costs associated with making and delivering the product.

This probably represents only a subset of the cost impacts associated with e-commerce as firms implement the technology. Similarly, beyond mere substitution, it is likely that e-commerce techniques may foster completely new ways of conducting businesses.

By placing the necessary information on line in an accessible format, electronic commerce merchants generally transfer transaction costs to the customer. As a result, even when customers execute the transaction in a traditional way (off-line), for example by buying a pc over the phone or coming to an auto dealer’s showroom to test drive a car, they come “pre-qualified”. They know more precisely what they do and do not want and are more likely to buy. This greatly increases the efficiency of the sales process. (Kehoe 1998)

E-commerce is very effective at reducing the costs of attracting new customers. While far from “friction –free”, advertising is typically cheaper than other media and more targeted. For example while CarPoint (an e-commerce auto referral site) typically charges dealers about \$200 in advertising and fees per car sold, car dealers typically spend \$450 per car sold through traditional media (Kehoe, 1998).

Knowledge-based economies are dominated by sophisticated products, customer services and after sales services. These are major costs for many firms. Traditionally, this meant placing service personnel in the field to visit clients, staffing call centers, and publishing extensive documentations of issuing software. For many firms these costs are substantial. With the help of e-commerce, firms are able to move much of this support on line so that customers can access database. This significantly cuts costs while generally improving quality of services.

E-commerce has allowed companies to significantly decrease the number of employees they require to operate certain kinds of businesses. Changes in the nature of what constitutes a store, the productivity of sales and customer services staff have a direct impact on the number and nature of staff hired. By and large, e-commerce shops require far fewer, but highly skilled employees. Amazon.com, the e-commerce books merchant, has only 614 employees (for sale of \$418 million) while Barnes & Noble; the largest physical US bookstore has 27,200 (for sale of \$2.8 billion). Although these numbers are not strictly comparable, they give a rough sense of the differences in employment levels and sales per employee.

Federal Express reports that their online customer services system has represented a saving of 20,000 new hires (about 14% of their total labor force). Cisco reports that thanks to its e-commerce website, they did not have to hire 1000 new staff for their sales/support group.

Just as electronic commerce can significantly reduce selling costs, it can also lower the costs associated with buying. While the actual transaction takes place outside the firm, the costs associated with procurement constitute significant internal costs. Even for low value requisition for office supplies or travels, the typical purchase

order costs between \$80 and \$125 to process, a sum that in many cases exceeds the value of the material being bought, owing to the error prone and time consuming process generally required to control purchasing costs. Internet based e-commerce procedures now make it possible to apply EDI-type systems to relatively small purchases, thereby drastically reducing errors, ensuring compliance with organizational norms, and speeding the process. Estimates of the savings gained range from 10 to 50 percent (**Girishankar, 1997b**)

Directly related to savings in time associated with procurement are savings in inventory costs - the faster an input can be ordered and delivered, the less the need for a large inventory. In the sales of all motor vehicle equipment in the United States of America, approximately, 37% of all inventories are "carried" by manufacturers, while 25 and 27 per cent of total non-farm wholesaler and retail trade hold inventories, respectively. Each stage of the value added chain therefore holds considerable inventories. It is estimated that for retailers, the cost of carrying an inventory for a year is equivalent to at least 25% of what they receive in payments for the product.

A key factor in reducing the costs of inventories is improving the ability to forecast demand more accurately. E-commerce merchants who allow consumers to customize their order or select form a wide variety of choices obtain valuable information on consumer preferences. This helps

them improve their ability to forecast demand. In a traditional store, a consumer might buy a computer with unwanted features or lacking certain features because that model was available. In such a situation, the merchant is ignorant of the consumer's true preferences. The e-commerce merchant who offers a "built to order" computer, instead knows exactly what consumers prefers and can adjust the product line accordingly.

Although shipping costs can increase the cost of many products purchased via e-commerce and add substantiality to final price, distribution costs are significantly reduced (by 50 to 90 per cent) for digital products such as financial services, software, and travel, which are important e-commerce segments. For these products, the cost reduction associated with e-commerce could have large economic impacts and further fuel the migration of these sectors to e-commerce (see table 3). In the case of airlines, electronic tickets now account for about half of all tickets for some major carriers; this has resulted in substantial savings and is forcing competitors to follow suit.

For sectors such as music, where songs can be downloaded directly from the producer, or news, where the journalists e-mail the reader directly, huge savings are reaped over traditional forms of distribution. This reduction in distribution costs is especially important for international trade. Even for tangible goods, e-commerce methods can reduce the administrative costs associated with trade and customs clearance by over 25%.

**Table 3: E-commerce impact on various distribution costs. (US\$ per transaction)**

	Banking	Bill payments	Term life insurance policy	Software distribution	Airline tickets
Traditional system	1.08	2.22	400	15	8.0
Telephone based	0.54	N/A	N/A	5	N/A
Internet based	0.13	0.65	200	.20	1.00
Savings (%)	89	71	50	97	87

Source: IBM preliminary estimates, quoted in Margherio et al., 1998

### **10.3 Changing Cost Structure of the Value Added Chain**

Just as electronic commerce reduces the internal costs of many transactions, it also changes the cost structure that dictates a firm's relationships with other businesses. This set of relationship is called the value added chain. At every stage of

processing, an intermediary often performs a service, which facilitates this flow – adding value but also adding cost. In many cases, this service is information-intensive, matching a buyer to seller, certifying parties in a transaction, providing support for the transaction and often involves some type of risk sharing. Electronic commerce, especially in intangible products, may reduce the

involvement of intermediaries in the value added chain and thus lower costs.

A potential larger impact involves the displacement of products whose basic function is to convey information that is asymmetrically passed. Even in such cases, however, many sellers will value the buffering and risk sharing service offered by these intermediaries and will retain them (Hawkins, 1998). The intermediaries most vulnerable to disintermediation are those that act as “human modems” and simply pass on information without adding much value. In almost all cases, e-commerce accelerates an existing trend. For instance, the use of discount brokers in the case of stock trading or many travel services directly available from the provider.

As e-commerce causes the disintermediation of some intermediaries, it creates both greater dependency on others and also some entirely new intermediary functions. The principal services provided by many of these new intermediaries is establishment of trust, a very important factor for electronic commerce, as buyer and seller may never meet, the openness and span of the Internet make fraud easier than in traditional commerce.

#### 10.4 Impact on costs related to logistics

A key feature of electronic commerce is the convenience of having purchases delivered directly. In the case of tangibles, such as books, this incurs delivery costs. The delivery agent plays an important role in assuring customers that purchases will arrive. Goldman Sachs conducted a survey of prices for a market basket of 30 products sold by Wal-Mart both online and offline (See Table 4), while the prices for the two market baskets did not differ by much, the final price of products purchased online was higher by 9 percent owing to shipping costs.

Some portion of the reduction in firms' cost can be attributed to the shifting of costs formerly borne by the firm to the customer in the form of self-service. For example, customers are now expected to learn about the product, answer their own customer support questions, and pay for shipment of the product. It is difficult to ascertain what portion of the firm's lower costs is due to shifting and what portion to actual reduction. As some customers will prefer not to pay these costs or to accept lower quality of service, it may potentially limit reduction.

**Table 4: A survey of studies analyzing the impact of e-commerce on prices**

Survey	Survey date	Coverage	Key findings
Ernst & Young	Jan .1998	Comparison of 3 on-line and off line vendors for 32 consumer products	Online prices were lower for 88% of products
Forrester research	July 1997	150 companies in 12 major industrial categories engaging in B2B e-commerce	Lower costs mean higher margin, most of which are currently being retained
Goldman Sachs	August 1997	Comparison of a 30 item market basket sold by Wal-Mart	Online prices were 1% higher, 9% with shipping cost included
OECD	March 1997	Comparison of 240000 prices for three products: books, CDs, and software	Online prices are slightly higher than those of 'hybrid' stores and change more frequently

Source:

<http://www.ey.com/wired/pricing> survey

<http://www.forrester.com>

<http://www.oecd.org/dsti/sti/it/ec>

## 11. CONCLUSION

A key reason why e-commerce, especially the business-to-business segment, is growing so quickly is its significant impact on costs associated with inventories, sales execution, procurement,

intangibles like banking, and distribution costs. If these reductions become pervasive, e-commerce has the potential to be the application that ushers in the large productivity gains. Achieving these gains is therefore contingent on a number of factors, including access to e-commerce systems and the

needed skills. However, what is unique about e-commerce over the Internet and the efficiency gains is that it promises the premium placed on openness. To reap the potential cost savings fully, firms must be willing to open up their internal systems to suppliers and customers. This raises policy issues concerning security and potential anti competitive effects as firms integrate their operations more closely.

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